Tuberculous Involvement of a Polymicrobial Liver Abscess

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HEPATIC INVOLVEMENT by miliary tuberculosis is a common occurrence in 50% to 80% of patients dying of pulmonary tuberculosis.[1] Localized hepatic abscesses, however, are rare—only about 90 cases have been reported in the world literature.[2,3] We report the case of a patient with a single, polymicrobial abscess that also contained *Mycobacterium tuberculosis*.

Report of a Case

A 63-year-old Papago Indian man was admitted to the Arizona Health Sciences Center University Hospital, Tucson, after family members brought him to the San Xavier Indian Health Center. For two to three days he had had greatly increased lethargy, malaise and anorexia, which followed three to four months of weight loss, fatigue and anorexia. He had no recent history of alcohol abuse. He had experienced vague midepigastric pain, particularly after meals, for several months. He also had recurrent urinary tract infections. His illness had not included cough, fever, chills, night sweats, nausea or vomiting.

Four months earlier, the patient had been admitted to hospital for pyelonephritis. During that hospital stay, results of liver function tests were abnormal and an abdominal sonogram showed cholelithiasis but a normal liver.

On physical examination upon admission to the University Hospital the patient appeared lethargic and chronically ill. His pulse rate was 140, respirations 18 per minute, temperature 36°C (96.8° F) and blood pressure 90/60 mm of mercury. There was a documented 14.5 kg weight loss since the admission four months earlier. Examination of the head and neck showed bilateral cataracts. The patient was edentulous. There was no lymphadenopathy. Cardiac examination revealed a regular rhythm with normal S1 and S2 sounds. There was a short grade 1/6 systolic ejection murmur heard over the left sternal border. Lungs had decreased breath sounds and dullness to percussion at the left base; there were no adventitious sounds. Abdominal examination revealed a nontender, nonnodular liver with an 8-cm span. The spleen was not palpable. There were no other masses or tenderness. Results of a rectal examination were within normal limits and the stool specimen was guaiac negative. Extremities had no edema or rashes. Neurological examination showed no abnormalities.

The initial chest roentgenogram showed a left pleural effusion, not present on a radiograph taken four months earlier (Figure 1). No infiltrates were noted. Initial sputum specimens were negative when tested for acid-fast bacilli. Analysis of urine showed the following: a specific gravity of 1.026, 2+ protein, 1+ bilirubin and 75 leukocytes per high-power field. The hemoglobin was 12.5 grams per dl and the hematocrit was 37.4% with normal indices. The leukocyte count was 10,000 per μl with 71% neutrophils, 18% band cells, 3% lymphocytes and 8% monocytes. The platelet count was 216,000 per μl. Results of liver function tests are shown in Table 1.

On the first hospital day, a left-sided thoracentesis was done; the 50-ml specimen of yellow fluid obtained had a leukocyte count of 8,500 per μl with 88% polymorphonuclear leukocytes, 12% monocytes and 500 erythrocytes. Protein was 3.8 and glucose was 121 mg per dl. The lactate dehydro-

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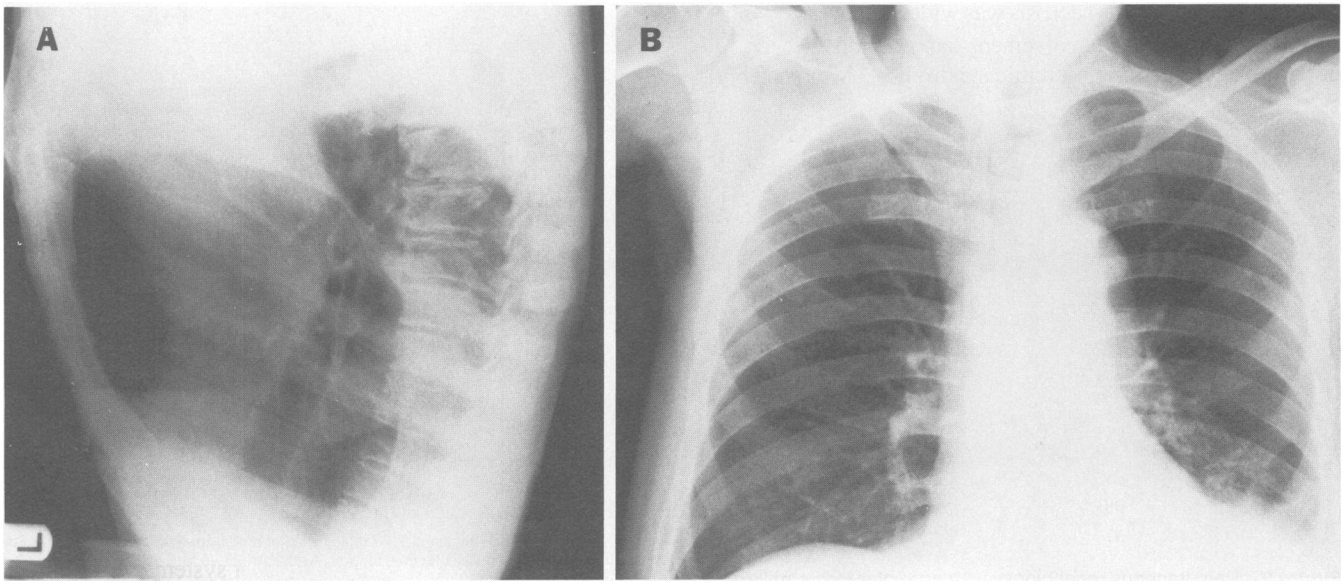

Figure 1.—Initial chest roentgenograms showing a left pleural effusion. **A**, posterior anterior view, **B**, lateral view.

TABLE 1.—*Results of Liver Function Test in a Patient With Tuberculous Disease*

	Total Bilirubin mg/dl	*Alkaline Phosphatase U/liter*	*AST U/ml*	*ALT U/ml*	*Weight (kg)*
07/18/80	1.2	318	43	310	85.4
09/17/80	...	...	...	235	...
10/24/80 (admitted)	2.0	446	38	...	70.9
01/23/80	...	245	61	...	....
05/13/81	...	191	56	...	...
07/02/81	0.9	161	46	37	89.5

AST = aspartate aminotransferase
ALT = alanine aminotransferase

genase value was 4,940 IU per liter. Gram stain and acid-fast bacillus stain of the pleural fluid showed no organisms. The patient was treated with ampicillin and gentamicin. Tests with first strength purified protein derivative, coccidioidin and two control skin tests were negative at 48 hours. The patient's liver function tests persistently showed abnormalities and differential diagnoses of biliary tract disease or possible pancreatic carcinoma were considered. On the fourth day in hospital, real-time sonography identified a 13.5-cm lesion in the left lobe of the liver (Figure 2). Using ultrasound-directed percutaneous aspiration, 50 ml of greenish, cloudy, foul-smelling fluid was removed. The Gram stain of the fluid showed 2+ leukocytes and 3+ pleomorphic Gram-negative rods. Clindamycin and cephapirin were added to therapy with gentamicin; ampicillin administration was discontinued. Smears from the liver abscess aspirate were positive for acid-fast bacilli. Isoniazid, rifampin and ethambutol were added to the above regimen.

The initial bacteriology reports listed four organisms growing from the abscess fluid: *Escherichia coli, Proteus mirabilis, Proteus morgani* and *Bacteroides fragilis.* On the sixth day the patient had a laparotomy for drainage of the abscess cavity; a 200-ml specimen of thick, green, foul-smelling material was removed from the left upper lobe of the liver. The gallbladder and common bile duct were not visualized. Smears from the liver abscess aspirate obtained during the surgical procedure were positive for large numbers of acid-fast bacilli. A sample of sputum taken after the operation was also positive for acid-fast bacilli.

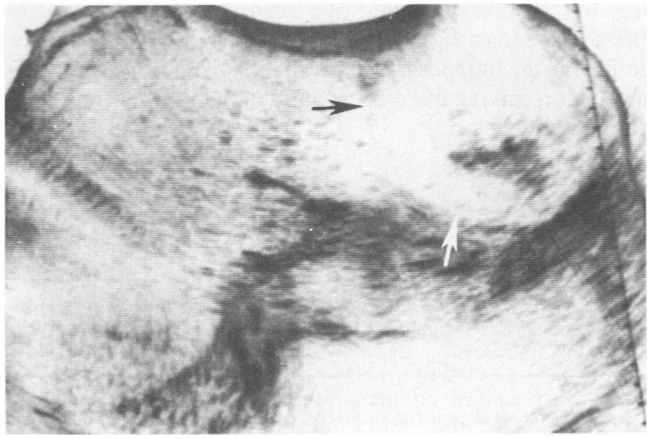

Figure 2.—Transverse sonogram showing ultrasonically a complex mass in the left lobe of the liver. Differential diagnostic considerations included abscess and neoplasm.

Cultures of the sputum, urine, pleural fluid and the liver abscess all eventually grew *Mycobacterium tuberculosis.* After antituberculous therapy was started, the patient slowly returned to his previous level of good health and nutrition. The liver function abnormalities improved and results of a follow-up ultrasound of the liver were normal one year after diagnosis and treatment. Repeated sputum cultures were negative for mycobacteria and a first strength purified protein derivative skin test was positive.

Discussion

Liver involvement occurs in all types of tuberculous disease, including primary pulmonary and miliary tuberculosis. In most cases hepatic involvement is clinically silent. Rarely, solitary or multiple hepatic abscesses are found whether or not the lungs are involved. In patients with chronic pulmonary tuberculosis who have no clinical evidence of extrapulmonary or miliary disease, hepatic abnormalities are found in 50% to 80% of autopsied patients.[4] Bowry and colleagues[5] reported the cases of 37 patients with proven chronic pulmonary tuberculosis who had no evidence of extrapulmonary or miliary disease, but who underwent liver biopsy before antituberculosis therapy. Specimens from 75% of these patients had nonspecific histologic abnormalities, including focal Kupffer cell hyperplasia, fatty metamorphosis and inflammation and dilation of sinusoids. Specimens from 25% of these patients had small noncaseating granulomata, a smaller figure than previously reported in autopsy series.[4,6] Results of tests of hepatic function were only mildly abnormal.

In patients with extrapulmonary tuberculosis, hepatic involvement is common. Korn and co-workers[7] studied 59 patients with extrapulmonary tuberculosis who had liver biopsies; granulomas were observed in 80% and the livers of all patients had histologic abnormalities. Liver function tests showed abnormal values with an elevated alkaline phosphatase level in 41% of the cases. Others have reported elevated alkaline phosphatase levels in patients and extensive granulomatous infiltration of the liver.[8]

Hepatic involvement is also common in miliary tuberculosis—granulomata are found in 80% to 100% of patients at autopsy. Symptoms or signs referable to the liver, however, are seldom the presenting complaints.[9,10]

Tuberculous hepatic abscesses, on the other hand, are rare. Only about 90 cases have been reported in the literature to date. In many ways, our case differs from those previously reported.[3,11,12] A single large liver abscess was found in a patient who had never had evidence of systemic tuberculosis. In retrospect, however, the small pleural effusion represented

tuberculosis of the lungs. Most cases in the literature describe miliary hepatic involvement; liver abscesses with only minimal or no pulmonary or gastrointestinal disease are quite rare.[11]

Tuberculous abscesses in the liver occur most frequently in children and in racial groups felt to have little natural immunity. Our patient, an American Indian, certainly fits into the latter high-risk group. Substandard living conditions and the use of alcohol also play an important role in the high incidence of tuberculosis in this group.

Our patient presented with fatigue, weight loss and vague midepigastric pain. There was no evidence of fever, chills or liver enlargement on physical examination. This is in contrast to the more common presentation, which, according to Leader,[3] includes in order of decreasing frequency: fever, liver enlargement, chills and weight loss. Jaundice is rare. Results of liver function tests have been nonspecific and are similar to those seen with most space-occupying lesions.

Our patient had no pulmonary symptoms and, unlike most patients with miliary tuberculosis,[10] skin tests were negative. The results of liver function studies in our patient were unusual because of the notably elevated alkaline phosphatase value, which initially suggested obstructive biliary disease.

Because the clinical findings are nonspecific, the diagnosis of hepatic tuberculosis is usually made at autopsy or occasionally when a laparotomy is done. Most of the patients described in the literature underwent surgical procedures because of suspected malignant lesion or pyogenic liver abscess. There are also reports of diagnosis from a liver biopsy specimen and occasionally by laparoscopy.[13,14] Both ultrasound and computed tomographic scans have been used extensively for detection and localization of abdominal abscesses.[15-17] The diagnosis of tuberculosis would have been easily missed if proper stains had not been done. Stains of the aspirate were not only positive for many Gram-negative organisms but for acid-fast bacilli as well. An important aspect of this case is that one cause for such an infectious process does not necessarily rule out another cause.

There are several reports of tuberculous liver abscesses being misdiagnosed during surgical procedures.[3] Zipser[11] has noted that bacteriologic confirmation of hepatic tuberculosis has been infrequent—more commonly the diagnosis has been suggested by the microscopic appearance of caseating granulomas.

In summary, our patient was found to have a polymicrobial liver abscess. It is interesting to postulate that he might have developed a Gram-negative bacterial abscess as a result of partial biliary tract obstruction.[18] Subsequently there may have been hematogenous seeding of the liver by tubercle bacilli, possibly from a pulmonary focus. The tuberculosis could have easily been missed, preventing this patient's full recovery, had not the index of suspicion for tuberculosis been high. We suggest that patients found to have defects in the liver, which may suggest carcinoma or liver abscess, be thoroughly investigated for tuberculosis, especially in high-risk populations. Ultrasonically guided fine needle aspiration is a particularly safe procedure for obtaining pathologic material in these patients who are often quite ill.

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Severe Intraoperative Anaphylactic Reaction to Dextran 70 Administered Intraperitoneally

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THE INTRAPERITONEAL administration of high-molecular-weight dextran has recently been proposed to decrease the risk of postoperative adhesion formation. In particular, the use of this agent has been advocated to prevent failure of reconstructive tubal procedures.[1] Whereas the efficacy of such therapy has not yet been convincingly proved in humans, the agent has been claimed to be safe when administered via the intraperitoneal route.[2] We report a case of a severe life-threatening anaphylactic reaction that developed minutes following the intraperitoneal instillation of 32% dextran 70 in a patient receiving the agent in an attempt to prevent adhesion formation.

Report of a Case

The patient, a 66-year-old woman with refractory stage IV ovarian carcinoma, was taken to surgery to have a Tenckhoff

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